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NOTE ON THE NINE-POINT CONIC.

By DR. MAXIME BÔCHER, Cambridge, Mass.

I find that in the Educational Times for March, 1864, Clifford refers incidentally, in the solution of a problem set by Prof. Sylvester, to the “ nine-point conic ;” thus showing that this conic, to which I called attention in the March number of the ANNALS, was then familiar to English mathematicians. I have not been able, however, to find any earlier mention of the subject.

Mr. Holgate, of Clark University, has called my attention to an anonymous note in the Messenger of Mathematics for 1869 (old series), in which the nine-point conic of a *quadrangle* is spoken of, and a similar terminology is suggested for the nine-point circle. I think something may be said in favor of the reverse of this, i. e. in favor of speaking, as I did in my note, of the nine-point conic of a *triangle* which corresponds to a certain *point*. This terminology, to be sure, introduces an unnecessary distinction between the four vertices of the quadrangle ; but, on the other hand, it makes many theorems more simple and striking, and brings the nine-point conic into close connection with the theory of the triangle so much elaborated of late. Thus, for example, the maximum ellipse which can be inscribed in a triangle would be the nine-point conic which corresponds to the centre of gravity of the triangle ; or, again (a theorem I will not venture to claim as new), *the polar line of the point P with regard to the triangle ABC (considered as a cubic curve) is parallel to the polar of P with regard to the nine-point conic of the triangle ABC which corresponds to P.*

It hardly needs mention, that many of the properties of the nine-point circle can be extended, with but little loss of simplicity, to the nine-point conic by the method of parallel projection. Thus, Feuerbach's theorem will give us :

Any nine-point conic of a given triangle touches the four conics, similar to itself and similarly placed, which are tangent to the three sides of the triangle.